In the Specification:

Please add the following beginning on page 2, line 19 after the Brief Description of FIGs. 3-15 and before the Detailed Description:

--Figure 16 depicts a sine wave and its corresponding vector notation.

Figure 17 depicts a vector notation in four configurations.

Figures 18 and 19 are examples of R and θ traces for fourth harmonic AC voltammetry (ACV-4).

Figures 20 and 21 depict examples of traces of scans with a smaller signal.

Figures 22 and 23 (medium sized signal) depict graphs of the same examples shown in Figures 20 and 21 but now as (X,Y).

Figure 24 and 25 (smaller signal) depict graphs of the same examples shown in Figures 20 and 21 but now as (X,Y).

Figure 26 depicts a two-dimensional graph plot of the tip of the data vector as a function of voltage.

Figures 27-28 depicts a graph choosing a frame of reference such that the X and Y axes straddle the signal.

Figures 29-30 depicts a graph choosing an axis pair that is roughly parallel and perpendicular to the signal (rotated 45° with respect to the axes drawn in the graph at the top of the page).

Figure 31 depicts a grouping of three points.

Figure 32 depicts a summation of the three points of Figure 31.

Figure 33 depicts the three points of Figure 31 illustrating that we see how the three sample data points of Figure 31 cluster around the line.

Figures 34 and 35 depict the result if an small data point is added to the group of Figure 31.

Figure 37 depicts the result of taking the data shown in Figure 26 and calculating the optimal phase using the data as shown in Figure 36, the resulting line being overlaid on the original data.

Figure 38 depicts the result of Figure 37 when orientating the signal differently relative to the dividing line between rotated and unrotated segments, in particular illustrating the calculated result when taking the signal of Figure 37 and rotating it 101 degrees clockwise.

Figure 39 depicts the case of Figure 38 with a resulting angle of 10 degrees where the vectoral sum of the absolute value of the coordinates of a signal is more along 0 degrees.

Figure 40 depicts rotation of the signal of Figure 39 from the far side of the 90 degree axis.

Figure 41 depicts the phase of the entire scan is mostly along 120°.

Figures 42 and 43 approximate the background by performing the rapid calculations necessary to fit polynomials to the entire scan (one each along the 0 and 90° axes).

Figures 44 and 45 depict the approximation to the background of Figures 42 and 43 after subtraction, converting the scan into something that is much more purely signal.

Figure 46 depicts Figures 44 and 45 as a two dimensional plot.

Figure 47 shows an example of sharp peak caused by the stripping of a metallic contaminant in AC voltammetry (fourth harmonic) displayed in R-space.

Figures 48 and 49 depict in X and Y (at ± 45° from the optimal phase) the sharp spike feature of Figure 47.

Figures 50 and 51 depict subtraction of a polynomial from the Y trace of Figures 48 and 49, illustrating one quick but rough method of monitoring this symmetry by separating out an approximate background (as we had done to determine the optimal phase) and then comparing the distribution of points above the baseline with the distribution below.

Figure 52 depicts the distribution of data above and below the approximated background, illustrating that the presence of the spike causes a larger range of values to exist below the background line than above it.

Figures 53-55 depict one process of estimating the remaining parameters of signal position and signal height for a signal 11.9 tall at a position of 0.20 with a center lobe separation of 0.072.

Figures 56 and 57 depict the initial guess using the procedure of Figures 53-55, illustrating that the initial guess will remain 11.6 tall at a position of 0.20 with an unusual peak off to one side that's slightly taller than the signal itself.

Figure 58 is the overlay of a real data trace and the corresponding initial guess of the above.

Figure 59 is a graphical comparison of the shape when the added term is 2n = 16 with when the shape when 2n = 2, when we use the value of *k* to determine how important it is to constrain the parameter relative to the standard error *E* (and also relative to any other parameters' constraints).

Figure 60 depicts the shape when using the following equation:

$$E' = E + k_1\left[\arctan\left(\frac{a-\bar{a}}{c}\right)\right]^2$$

Figure 61 depicts other shapes using the case of our ACV-4- center lobe pairs (described previously).

Figure 62 depicts a graph of a signal to be judged if the fit has too much error, that is, to make sure that we've locked into a real signal.

Figure 63 is the R composite $\sqrt{X^2 + Y^2}$.

Figure 64 depicts the R composite with the background polynomials subtracted

$$\sqrt{\left(X - X_{background}\right)^2 + \left(Y - Y_{background}\right)^2}$$

Figure 65 shows the filtered, signal-like noise is drawn on top of the residual (Raw) from the previous example.

Figure 66 is the original data for scans with signals.

Figure 67 is the data with the background subtracted, illustrating using the model as a guide we can use the fit parameters to calculate the equation for the background alone and subtract this from the data, for example, in ACV-4 we can subtract the polynomial in X and in Y.

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